

CLAIMS

1. A particle separator comprising:
a vortex chamber receiving feed slurry via a feed inlet, the feed inlet being positioned relative to the vortex chamber to effect rotation of the feed slurry upon entry in the vortex chamber and to generate a fluid vortex, the vortex chamber comprising a conical section beneath the feed inlet, wherein the conical section terminates at an apex;
and
a bulb housing coupled with the vortex chamber, the bulb housing comprising a vortex destroyer disposed adjacent the conical section apex, wherein the vortex destroyer contains the fluid vortex to the vortex chamber, the bulb housing defining a settling chamber beneath the vortex destroyer that collects solid particles.
2. A particle separator according to claim 1, wherein the bulb housing is removably coupled with the vortex chamber.
3. A particle separator according to claim 1, wherein the vortex destroyer comprises at least one fin extending partially across a width of the bulb housing.
4. A particle separator according to claim 3, wherein the vortex destroyer comprises a plurality of fins.
5. A particle separator according to claim 1, wherein the vortex destroyer comprises at least one substantially V-shaped fin suspended from a bottom section of the vortex chamber into the bulb housing.
6. A particle separator according to claim 5, wherein the vortex destroyer comprises a plurality of substantially V-shaped fins.
7. A particle separator according to claim 6, wherein the bulb housing is cylindrical, and wherein the plurality of substantially V-shaped fins are equally spaced about a circumference of the bulb housing.
8. A particle separator according to claim 1, wherein the vortex destroyer is configured such that solid materials in the feed slurry move radially outward from the conical section apex.

9. A particle separator comprising:
a feed inlet;
a vortex chamber in fluid communication with the feed inlet and including a conical section beneath the feed inlet, wherein the conical section terminates at an apex;
a bulb housing coupled with the vortex chamber;
a vortex destroyer disposed in the bulb housing adjacent the conical section apex;
and
a settling chamber defined by the bulb housing beneath the vortex destroyer.
10. A particle separator according to claim 9, wherein the bulb housing is removably coupled with the vortex chamber.
11. A particle separator according to claim 9, wherein the vortex destroyer comprises at least one fin extending partially across a width of the bulb housing.
12. A particle separator according to claim 9, wherein the vortex destroyer comprises at least one substantially V-shaped fin suspended from a bottom section of the vortex chamber into the bulb housing.
13. A method of separating particles from a feed slurry using the particle separator of claim 1, the method comprising:
flowing the feed slurry into the vortex chamber via the feed inlet and generating a fluid vortex;
flowing the fluid vortex through the conical section apex;
containing the fluid vortex to the vortex chamber with the vortex destroyer;
permitting solid particles to move radially outward along the vortex destroyer;
and
collecting the solid particles in the settling chamber.
14. A vortex destroyer disposed within a bulb housing adjacent a vortex outlet of a vortex chamber, the vortex destroyer configured for containing a fluid vortex to the vortex chamber.
15. A vortex destroyer according to claim 14, comprising at least one fin extending partially across a width of the bulb housing.

16. A vortex destroyer according to claim 12, comprising a plurality of fins.
17. A vortex destroyer according to claim 14, comprising at least one substantially V-shaped fin suspended from a bottom section of the vortex chamber into the bulb housing.
18. A vortex destroyer according to claim 17, comprising a plurality of substantially V-shaped fins.
19. A vortex destroyer according to claim 18, wherein the bulb housing is cylindrical, and wherein the plurality of substantially V-shaped fins are equally spaced about a circumference of the bulb housing.
20. A vortex destroyer according to claim 14, configured relative to the bulb housing such that solid materials in a feed slurry from the vortex chamber move radially outward from the vortex outlet.